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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,598	09/29/2000	Jonathan C. Lueker	2207/9048	4444

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EXAMINER

WANG, TED M

ART UNIT	PAPER NUMBER
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2634

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DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/670,598	Applicant(s) LUEKER ET AL.	
	Examiner Ted M Wang	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 13 February 2004.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-3, 6, 9 and 17-19 is/are rejected.

7) ☒ Claim(s) 4, 5, 7, 8, 10-16 and 20-24 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____.
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DETAILED ACTION

1. Claims 1-24 are pending in the application.

Response to Arguments

2. Applicant's arguments filed on February 13, 2004, have been fully considered.
The Examiner has thoroughly reviewed Applicants' arguments with the following results.

- ☐ Claim rejections under U.S.C. 102 & 103: The Applicants' arguments to Claims 1-3, 6, 9, and 17-19 define more precisely for the claimed apparatus and method, and are persuasive. None of the previously cited references teach the features stated in Claim 1-3, 6, 9, and 17-19. The Claims 1-24 have been reexamined.

Drawings

3. The drawings are objected to because
 - ☐ the reference numbers (18, 22b-22e, 62b, and 62c) are not clear from the interference lines in Fig.2, and
 - ☐ typing is required in Figs.1-9.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 9, and 17 are objected to because of the following informalities: The numbers n and m are indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Paneth (US4,764,940).

- To continue examines the claims 1-24, the m and n are interpreted as any numbers.
- In regard claim 1, Paneth discloses a modem for RF subscriber telephone system with a method comprising over-sampling data transmitted at a first frequency using a clock at a second frequency to obtain groups of n samples (Fig.1A, 3 and 4, and column 7 lines 24-55); storing a plurality of m of said groups of n samples (Fig.3 elements 81-83, and column 7 line 24 – column 8 line 9); outputting said plurality of in of said groups of n samples simultaneously at a clock frequency which is said second frequency divided by m (column 7 line 24 – column 8 line 9).
- In regard claim 2, the limitation of using said plurality of m of said groups of n samples to detect transitions in said data; and maintaining an historical record of said transitions can further be taught in column 7 line 64 – column 8 line 15.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paneth (US4,764,940) in view of Yang et al. (Solid-State Circuits, IEEE Journal of, Volume: 33 Issue: 5, May 1998).

- In regard claim 3, Paneth discloses all limitation as described in claims 1 and 2 except specifically teaching that use historical record to determine a phase of second frequency that is nearly centered in the middle of a bit time of said data at first frequency.

Yang et al. cited by the applicant discloses a 0.5- μ m CMOS 4.0-Gbit/s serial link transceiver with Data recovery Using Oversampling with a phase-picking algorithm to determine the middle sample within the bit boundaries that is selected as the data (page 717 section IV lines 1-46) in order to keep the total "effective jitter" below the 83-ps quantization spacing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Paneth's method in view of Yang's disclosure in order to keep the total "effective jitter" below the 83-ps quantization spacing.

- In regard claim 6, the limitation of using historical record to select bits of data at first frequency and output bits in groups of generally m valid bits at a time at said second frequency divided by m can further be taught by Paneth in (column 7 line 24 – column 8 line 9).

9. Claims 9, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paneth (US4,764,940) in view of Jeong (US6,107,946).

- In regard claim 9, Paneth discloses all limitation as described in claim 1 except specifically teaching that use n samples to detect the transitions between two logic levels in transmitted data and provide n edge results which are at one logic level to indicate a transition and the other logic level to indicate no transition. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.

Jeong discloses a high speed serial link for fully duplexed data communication with use n samples to detect the transitions between two logic levels in transmitted data and provide n edge results which are at one logic level to indicate a transition and the other logic level to indicate no transition (column 14 lines 30-63, and column 15 lines 32-33, and column 16 lines 3-63, and Fig.10 element 220) in order to supply the differential data output signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Paneth's method in view of Jeong's disclosure in order to supply the differential data output signal.

- In regard claim 17, which is an apparatus claim related to claim 1, the limitation of the n sampling clock inputs each at a second frequency but different phase each clock shifted in phase from an adjacent clock by $360/n$ degrees can further be taught by Jeong in column 5 lines 22-28 in order to supply a much higher speed clock for clock recovery. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 18, which is a apparatus claim related to claim 9, the limitation of further including an edge detector to detect the transition of the clock can further be taught by Jeong in column 13 lines 10-28 and Fig.10 element 210. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 19, the limitation of edge detectors comprise a plurality of XOR gates can further be taught by Jeong in Fig.20 elements 261 and column 16 lines 30-33. Note that the FA (Full adder) is a combinational logic of AND, OR, and XOR.

Allowable Subject Matter

10. Claims 4, 5, 7, 8, 10-16, and 20-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Reference 5,617,088, and 5,119,093 are cited because they are put pertinent to the method and apparatus for supporting variable sampling rate. However, none of references teach detailed connection as recited in claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (703) 305-0373. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600